

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A LIST OF THE FISHES OF NEW JERSEY.

BY HENRY W. FOWLER.¹

Fourteen years have passed since my very incomplete work, "The Fishes of New Jersey," appeared. Using the old work as a basis, the attempt in the present paper is to gather all the data relative to the distribution of each species. Only counties are mentioned from which each has been recorded. Where additional notes and materials have been studied the localities are indicated in parentheses. This contribution is therefore offered as a slight aid to geographical distribution. Two confused blennies are also indicated as additions to the fauna.

Samuel Latham Mitchill described four species from New Jersey, though only one is now admitted as valid. Like many other early writers he unfortunately proposed a large number of names which have fallen as synonyms. Charles Alexandre Le Sueur is really the first to carefully study New Jersey fishes. He described thirteen valid species and twenty-eight synonyms, though only four of the latter from New Jersey. Although Constantine Samuel Rafinesque described many of our species, very few were actually obtained in New Jersey. Achille Valenciennes described several New Jersey species and a great number of synonyms. Four species are credited to James Ellsworth De Kay, likewise many synonyms. Joseph Leidy, Theodore Nicholas Gill and John Adam Ryder were only incidentally interested in New Jersey Ichthyology.

Papers omitted or subsequent to those in my "Fishes of New Jersey" are as follows:

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CHARLES CONRAD ABBOTT (1843-1919).

1864. On *Belone truncata* and on the flesh of *Lepidosteus*. <Proc. Acad. Nat. Sci. Phila., 1863 (1864), p. 282.
1867. An ugly Customer. [*Lepidosteus*.] <Riverside Magazine, I, 1867, pp. 174-6.
1872. The Banded Sunfish (*Mesogonistius chætodon* Gill). <Hardwicke's Sci. Gossip, VIII, 1872, pp. 29-30, fig. 15.
- The Pirate (*Aphredoderus sayanus* Cuvier). <L. c., pp. 151-2, fig. 103.
- The Stone Age Fish and Fishing. [*Lepidosteus ossesus*.] <L. c., pp. 268-70, fig. 183.
1873. Notes on the Gizzard-shad in New Jersey. [*Chatæsus cepedianum*.] <L. c., IX, 1873, pp. 55-6, fig. 36.
- The Silver-fin (*Hypsilepis analostanus* Cope). <L. c., pp. 224-5, fig. 139.
1874. The Golden Minnow (*Hybognathus osmerinus* Cope). <L. c., X, 1874, pp. 9-10, fig. 9.
- The Darter (*Boleosoma olmstedii* Storer). <L. c., pp. 57-8, fig. 49.
- Note on the Breeding-habits of the Mud Minnow. [*Melanura limi*.] <Pop. Sci. Monthly, IV, 1874, pp. 744-5.
1875. The Big-eared Sunfish. <Hardwicke's Sci. Gossip, XI, 1875, pp. 7-9, fig.
- Two Mud-loving Fishes. [*Umbra pygmæa* and *Acantharchus pomotis*.] <L. c., pp. 104-7, figs. 63-4. (An aquarial study of their color and certain habits.)
1876. Notes on the Habits of the Yellow Perch. <Field and Forest, I, 1876, pp. 3-4.
- A Voracious Fish. [*Esox tridecemlineatus*.] <Forest and Stream, V, February 3, 1876, p. 404.
1877. Traces of a Voice in Fishes. <Amer. Nat., XI, 1877, pp. 147-56.
1879. Winter Habits of the Eel. <Sci. News, I, 1879, pp. 183-4.
1883. The Intelligence of Fish. <Science, I, April 22, 1883, pp. 327-8.
1884. The Color-sense in Fishes. <L. c., IV, 1884, pp. 336-9, 2 figs.
- On the Habits of Certain Sunfish. [*Mesogonistius chætodon* and *Enneacanthus simulans*.] <Amer. Nat., XVII, 1884, pp. 1254-5.
1888. Note on the Breeding-habits of the Bill-fish (*Tylosurus longirostris*). <Science, XII, August 10, 1888, p. 72.
- JOSEPH LEIDY (1823-1891).
1888. Distinctive characters of *Odontaspis littoralis*. <Proc. Acad. Nat. Sci. Phila., 1888, pp. 162-4. (On Abbott's example, and jaws mostly from New Jersey.)
- EUGENE SMITH (1860-1912).
1902. The Home Aquarium. New York. 1902. Fishes, pp. 74-129, figs. 48-87. (Popular account of local fishes about New York, with notes on their natural history in the aquarium.)

1905. *Exolgossum* east of the Delaware. <Science, n. s., XXII, pp. 119-120.
1912. *Fundulus* and fresh water. <L. c., n. s., CXXV, 1912, pp. 144-145.
- HENRY W. FOWLER.
1906. The Fishes of New Jersey. <Rep. N. J. State Mus., 1905 (1906), part 2, pp. 35-477, pls. 1-103, colored frontispiece and 83 text figures.
- Some Unusual New Jersey Fishes. <Science, XXIV, November 9, 1906, pp. 596-7.
1907. Cape Waters' Fish Life. <Star and Wave, Cape May, July 13, 1907, p. 1. (Popular newspaper account.)
- A Supplementary Account of the Fishes of New Jersey. <Rep. N. J. State Mus., 1906 (1907), pp. 251-350, pls. 70-122, 44 text figures.
- *Gambusia* in New Jersey. <Science, XXVI, November 8, 1907, p. 639.
1908. Further Notes on New Jersey Fishes. <Rep. N. J. State Mus., 1907 (1908), pp. 120-89, pls. 66-8.
1909. Note on Some New Jersey Fishes. <Science, XXIX, January 8, 1909, p. 79.
- Notes on Fishes at Corson's Inlet, New Jersey. <L. c., April 2, 1909, p. 544.
- Notes on New Jersey Fishes. <Rep. N. J. State Mus., 1908 (1909), pp. 351-92.
- *Fundulus luciae* again in New Jersey. <Science, XXX, October 15, 1909, p. 526.
- A new species of Fish of the genus *Atopichthys*, with notes on New Jersey Fishes. <Proc. Acad. Nat. Sci. Phila., 1909, pp. 406-8, fig.
- The Smooth Hound and Some Other Fishes in New Jersey. <Science, XXX, December 3, 1909, p. 815.
1911. Little Known New Jersey Fishes. <Proc. Acad. Nat. Sci. Phila., 1910 (January 13, 1911), pp. 599-602.
- A New Flat Fish from New Jersey. <L. c., 1911 (May 24), pp. 200-3.
1912. Records of Fishes for the Middle Atlantic States and Virginia. <L. c., 1912, pp. 34-59, 2 figs. (New Jersey, pp. 35-41.)
- Hermaphrodite Shad in the Delaware. <Science, XXXVI, July 5, 1912, pp. 18-19.
1914. Description of a new Blenny from New Jersey, with notes on other Fishes from the Middle Atlantic States. <Proc. Acad. Nat. Sci. Phila., 1914 (June 24), pp. 342-88, 1 fig. (New Jersey, pp. 342-6.)
- Notes on New Jersey Fishes. <Copeia, December 15, 1914, No. 13.

1915. A Cow-nosed Ray. <In the Open, March, 1915, p. 19 (with fig.). (Large Rhinoptera with young, taken off Egg Island.)
 — The Yellow-tail (*Ocyurus chrysurus*) in New Jersey. <*Copeia*, No. 17, April 16, 1915.
1916. Notes on New Jersey Fishes, several new to the State. <*L. c.*, February 24, 1916, No. 27, pp. 10-12.
 — Records of Northern New Jersey Fishes. <*L. c.*, May 24, 1916, No. 31, pp. 41-2.
1917. Notes on Fishes from New Jersey, Pennsylvania and Maryland. <*Proc. Acad. Nat. Sci. Phila.*, 1917 (March), pp. 108-26. (New Jersey, pp. 108-15.)
 — Shufeldt's Mud Minnow. <*L. c.*, October 26, 1917, No. 50, pp. 94-6.
1918. Fishes from the Middle Atlantic States and Virginia. <*Occas. Pap. Mus. Zool. Univ. Mich.*, No. 56, May 6, 1918, pp. 1-19, pls. 1-2. (New Jersey, pp. 1-8.)
1919. *Tylosurus acus* in New Jersey. <*Copeia*, April 15, 1919, No. 68, pp. 13-14.
1920. Notes on New Jersey, Pennsylvania and Virginia Fishes. <*Proc. Acad. Nat. Sci. Phila.*, 1919 (1920), pp. 292-300. (New Jersey, pp. 292-98.)
 HENRY W. FOWLER and RICHARD J. PHILLIPS.
1910. A New Fish of the Genus *Paralepis* from New Jersey, <*Proc. Acad. Nat. Sci. Phila.*, 1910 (July 25), pp. 403-6, fig.
 RAYMOND C. OSBURN.
1910. A Rare Fish from the New Jersey Coast. <*Science*, XXXII, Oct. 21, 1910, p. 568. (Records *Polyprion americanus* off Asbury Park.)
 CHARLES H. TOWNSEND.
1911. Oceanic Bonito and Little Tunny. <*Bull. Zool. Soc. N. Y.*, No. 48, 1911, p. 811.
 — Local Tuna Fishing. <*L. c.*, p. 812.
 RICHARD J. PHILLIPS.
1914. King Fish at Corson's Inlet. <*Copeia*, April 29, 1914, No. 9.
 WILLIAM T. DAVIS.
1915. The Brook Lamprey in New Jersey. <*Copeia*, May 15, 1915, No. 18, pp. 1-2.
 LOUIS HUSSAKOF.
1916. Evidence of the Presence of *Carcharodon* on the New Jersey Coast during the Past Summer. <*Copeia*, November 24, 1916, No. 37, pp. 86-7.
 JOHN T. NICHOLS.
1916. Supplementary Note on *Carcharodon carcharias* Off South Amboy. <*Copeia*, November 24, 1916, No. 37, p. 87.

1918. Fishes of the Vicinity of New York City. <Handbook Series, No. 7, Am. Mus. Nat. Hist., New York, pp. 18-118. (Popular illustrated paper, with list of species.)

W. W. WELSH.

1916. Measurements of a Large Example of *Cestracion zygæna* (Linnaeus). <Copeia, December 24, 1916, No. 38, pp. 94-5.

PETROMYZONIDÆ.¹

Petromyzon marinus Linnaeus. Lamprey.

Atlantic (Nancock Creek), Burlington (Dutch Neck fishery, Florence, Burlington), Cape May (Cedar Swamp Creek Forks), Camden (Magnolia), Cumberland (Bay Side, Bridgeton), Essex, Gloucester (Oldman's Creek, Pitman), Mercer and Monmouth Counties.

Entosphenus aepypterus (Abbott). Brook Lamprey.

Bergen and Camden Counties. The late Henry Hales, of Ridgewood, informed me in 1909 of the occurrence of small lampreys in the Hackensack River where it joins the Saddle River. On two occasions he obtained them in the Hackensack several years previously. They were caught in May, in the upper water, near the dam used for water-supply.

CARCHARIIDÆ.

Carcharias taurus Rafinesque. Sand Shark.

Atlantic, Cape May² (Holly Beach, Anglesea), Camden, Monmouth (Asbury Park, lower New York Bay), Ocean (Barnegat Inlet), Salem (Delaware River opposite mouth of Alloway Creek), Union (Perth Amboy in Raritan Bay) Counties.

ALOPIIDÆ.

Alopias vulpinus (Bonnaterre). Thresher Shark.

Atlantic and Cape May Counties.

ISURIDÆ.

Isurus nasus (Bonnaterre). Mackerel Shark.

Reported from Cape May as rare straggler.³

Isurus tigris (Atwood).⁴ Porbeagle.

Atlantic and Monmouth Counties.

¹ In Man. Vert. East. U. S., Ed. 8, 1899, p. 8, Jordan gives "N. York to South America" for the range of *Branchiostoma caribæum* Sundevall. Just what this statement is worth I do not know, as no further details appear. Possibly *Amphioxus lancolatus* as recorded by Andrews from lower Chesapeake Bay may represent this species.

² The jaws I recorded from Townsend's Inlet as *Lamna cornubica* in Rep. N. J. State Mus., 1905 (1906), p. 56, are really those of the present species.

³ *Lamna cornubica* T. H. Bean, Bull. U. S. F. Com., 7, 1887 (1889), p. 256 (N. Lat. 38° 7' W. Long. 74° 21'); Fowler, Rep. N. J. State Mus., 1905 (1906), p. 56 (Cape May); Fowler, Science, 24, November 9, 1906, p. 596 (Sea Isle City).

⁴ Possibly *Lamna punctata* Wilder, Science, I, November 6, 1880, p. 236, from Great Neck, Long Island, is also this species.

Carcharodon carcharias (Linnæus). Great White Shark.

Recorded by Hussakof, later by Nichols, from Monmouth County. Several bathers (Charles Epting Vansant at Beach Haven, Charles Bruder at Sea Girt, Lester Stillwell and Stanley Fisher at Matawan) were said to have perished from attacks by large sharks, likely this species, during the summer of 1916.

Cetorhinus maximus (Gunner). Basking Shark.

Monmouth County. Only known from Le Sueur's early account of *Squalus elephas*.

GALEORHINIDÆ.

Mustelus canis (Mitchill). Smooth Dog Shark.

Atlantic, Cape May, Cumberland (Bay Side), Monmouth, Ocean (Seaside Park), Salem (Delaware River near mouth of Alloway Creek and Pennsville) Counties.

EULAMIIDÆ.

Galeocerdo arcticus (Fabricius). Tiger Shark.

Cape May County. The jaws of a large example obtained many years ago in Delaware Bay from W. J. Bates, in the Academy, also the pair from Beesley's Point.

Eulamia obscurus (Le Sueur). Dusky Shark.

Atlantic, Cape May and Monmouth Counties. Gebhard mentions¹ a New York specimen, and one of seven hundred pounds taken at Deal Beach,² may really be the following species.

Eulamia milberti (Müller and Henle). Milbert's Shark.

Atlantic, Camden, Cape May, Cumberland (Egg Island and Fortescue), Monmouth³ and Union Counties.

Scoliodon terrae-novae (Richardson). Sharp-nosed Shark.

Cape May County. Mr. I. N. De Haven reports one at Sand Thoroughfare, near Absecon in Atlantic County, about 1899.

SPHYRNIDÆ.

Sphyrna tiburo (Linnæus). Bonnet-headed Shark.

Cape May County. One reported by Mr. T. D. Keim off Black Tom Island in the summer of 1906, said to have been about six feet long.

Sphyrna zygaena (Linnæus).

Atlantic, Cape May, Cumberland (Fortescue), Monmouth and Ocean Counties. The Academy first obtained an example in 1843, from Manasquan.

¹ Eighth An. Rep. Reg. Univ. N. Y., 1855, p. 64.

² Forest and Stream, 35, August 7, 1890, p. 51.

The large example I reported as *Carcharhinus obscurus* in Rep. N. J. State Mus., 1907 (1908), p. 124, probably from near the mouth of Delaware Bay, is *Eulamia commersonii*. The record should be omitted from the present list.

³ The example I recorded from Perth Amboy as *Eulamia obscurus* is undoubtedly the present species. Proc. Acad. Nat. Sci. Phila., 1910 (1911), p. 599.

SQUALIDÆ.

Squalus acanthias Linnæus. Spiny Dog Shark.

Atlantic, Cape May, Monmouth (Asbury Park and Seabright) and Ocean Counties. Not seen by me from Delaware Bay, though the Academy received an example from there in 1855.

SQUATINIDÆ.

Squatina dumeril Le Sueur. Angel Shark.

Atlantic and Cape May Counties.

PRISTIDÆ.

Pristis pectinatus Latham. Saw Fish.

Cape May County. A saw received in the Academy in 1846 from "off Cape Island" I have not located. Possibly it is one of the many saws in the collection without data.

The only New York record is by Schœpf,¹ for an example taken in July, 1782. This is later mentioned as *Pristis antiquorum* by De Kay, Gebhard, and apparently by Hall,² who refers it to New York Bay.

RAJIDÆ.

Raja erinacea Mitchill. Hedge-hog Skate.

Atlantic, Cape May, Cumberland (Bay Side), Monmouth, Ocean (Barnegat) Counties.

Raja ocellata Mitchill. Spotted Skate.

Atlantic, Burlington, Cape May, Cumberland (Bay Side), Monmouth, Ocean (Cholera Bank) Counties.

Raja scabrata Garman. Rough Skate.

Ocean County. An egg-case and young as *Raja radiata*.³

Raja eglanteria Lacépède. Bob-tailed Skate.

Atlantic, Cape May (Bare Hole Fishing Grounds, Dias Creek, Five Fathom Bank, Hereford Inlet, Holly Beach, McCrie's Shoal, Stone Harbor, Uncle Eph's Shoal), Cumberland (Bay Side), Monmouth (Ocean Grove), Ocean Counties.

Raja laevis Mitchill. Barn-door Skate.

Atlantic, Cape May (Ocean City), and Monmouth Counties.

TORPEDINIDÆ.

Torpedo nobiliana Bonaparte. Torpedo.

Cape May and Monmouth Counties.

¹ *Squalus pristis* in Beob. Nat. Ges. Berlin, 2, 1788, p. 185.

² Twenty-fourth Rep. N. Y. State Mus., 1870, p. 36.

³ Fowler, Proc. Acad. Nat. Sci. Phila., 1910, p. 470.

DASYATIIDÆ.

Urobatis jamaicensis (Cuvier). Round Sting-ray.

Known from Garman's record of a fœtus credited to New Jersey.

Dasyatis centroura (Mitchill). Thorny Sting-ray.

Atlantic (Atlantic City), Cape May, Monmouth (Ocean Grove and Port Monmouth) Counties.

Dasyatis hastatus (De Kay). Round Sting-ray.

Cape May County. Recorded by Baird and Bean. The examples I recorded from Green Creek belong to this species, rather than *D. centroura*.¹ Gebhard mentions² the species from New York Bay, and a later reference³ is based on a very early occurrence.

Dasyatis say (Le Sueur). Say's Sting-ray.

Atlantic, Cape May and Ocean Counties. Müller and Henle record it from New York as *Trygon sayi* on Milbert's material.⁴ It doubtless occurs along the northern shores of New Jersey, as I have it from Barnegat Inlet.

Pteroplatea micrura (Schneider). Butterfly Ray.

I have no material from New Jersey, though several times reported from Cape May County (off Wildwood and in Delaware Bay).

MYLIOBATIDÆ.

Myliobatis freminvillii Le Sueur. Eagle Ray.

Cape May County. Frequent in mid and late summer.

RHINOPTERIDÆ.

Rhinoptera bonasus (Mitchill). Cow-nosed Ray.

Atlantic, Cape May, Cumberland (off Egg Island), and Monmouth Counties.

MOBULIDÆ.⁵

Manta birostris (Walbaum). Manta Ray.

Cape May County. LeSueur and Mitchill, both in 1824, describe it from "near the entrance to Delaware Bay."

ACIPENSERIDÆ.

Acipenser sturio Linnæus. Sturgeon.

Atlantic, Burlington (Burlington, Dutch Neck fishery, Florence), Cape May (Fishing Creek), Camden, Cumberland (Bay Side, Bridgeton),

¹ Proc. Acad. Nat. Sci. Phila., 1909, p. 407.

² Ninth An. Rep. Reg. Univ. N. Y., 1856, p. 29.

³ Forest and Stream, I, August 28, 1873, p. 40.

⁴ Besch. Plagiost., 1841, p. 166.

⁵ Though *Mobula hypostomus* (Bancroft) is not known from New Jersey, Garman gives its range as Brazil to New York. Possibly *Cephalopterus vampirus* De Kay, Geol. Rep. N. Y., 1840, p. 31, from New York, may be *M. hypostomus*.

Gloucester (Oldman's Creek and Bridgeport), Mercer, Monmouth, Ocean (Barnegat), Salem Counties.

Acipenser brevirostrum Le Sueur. Short-nosed Sturgeon.

Burlington, Cape May, Mercer, Gloucester Counties.

LEPISOSTEIDÆ.

Lepisosteus osseus (Linnæus). Long-nosed Gar-pike.

Mercer and Warren Counties. Schœpf mentions it as *Esox osseus*¹ and later Mitchill records one from Long Island in Scudder's Museum.

ELOPIDÆ.

Megalops atlanticus Valenciennes. Tarpon.

Atlantic, Cape May (Stone Harbor), Monmouth and Ocean Counties.

Elops saurus Linnæus. Ten-pounder.

Cape May County.

ALBULIDÆ.

Albula vulpes (Linnæus). Lady Fish.

Once recorded from New Jersey without definite locality, from a specimen in Blackford's market.²

DOROSOMIDÆ.

Dorosoma cepedianum (Le Sueur). Mud-shad.

Atlantic, Burlington (Beverly, Delanco, Florence, Riverton), Cape May, Gloucester, Mercer Counties.

CLUPEIDÆ.

Etrumeus teres (De Kay). Round Herring.

Atlantic, Cape May and Ocean Counties. Valenciennes reported it from "Philadelphie," likely from New Jersey.³

Clupea harengus Linnæus. Herring.

Cape May County.

Pomolobus mediocris (Mitchill). Fall Herring.

Atlantic (Nancock Creek), Burlington (Dutch Neck fishery), Cape May, Cumberland (Bay Side), Monmouth, Ocean Counties.

Pomolobus pseudoharengus (Wilson). Alewife.

Atlantic (Nancock Creek), Burlington (Beverly, Burlington, Florence, Riverton), Cape May (Cape May, Dias Creek, Fishing Creek, Higbee's Beach, Johnson's Run in Tuckahoe River), Camden (Camden, Palmyra), Cumberland (Bridgeton), Gloucester (Oldman's Creek), Hoboken, Mercer (Crosswicks Creek), Middlesex and Monmouth (Manasquan) Counties.

¹ Beob. Nat. Gesell. Fr. Berlin, 2, 1788, p. 177.

² *Albula condrychus* in Forest and Stream, 11, October 10, 1878, p. 208.

³ Hist. Nat. Poiss., 20, 1847, p. 310.

Pomolobus aestivalis (Mitchill). Summer Herring.

Atlantic (Nancock Creek), Burlington (Dutch Neck fishery, Florence), Cape May, Gloucester, Hoboken, Mercer, Middlesex and Monmouth Counties.

Alosa sapidissima (Wilson). Shad.

Atlantic (Nancock Creek, Somer's Point), Bergen (Fort Lee, Passaic River), Burlington (Beverly, Burlington Island, Dutch Neck fishery, Riverton), Camden (Cooper's Creek), Cape May (Cape May Point), Cumberland (Bridgeton, Cohansey Creek, Egg Island, Maurice River), Gloucester (Big Timber Creek, Mantua Creek, Oldman's Creek, Woodbury Creek), Hudson (New York Bay), Mercer (Scudder's Falls, Well's Falls), Monmouth (Asbury Park, Manasquan River, Red Bank, Sandy Hook Bay, Shrewsbury River), Middlesex (Perth Amboy and Raritan Bay), Ocean (Barnegat, Metedecong River), Salem (Alloway Creek, Oakwood Beach, Penn's Grove), Somerset (Bound Brook) Counties.

Opisthonema oglinum (Le Sueur). Thread Herring.

Atlantic and Cape May (Cape May) Counties.

Brevoortia tyrannus (Latrobe). Menhaden.

Atlantic (Nancock Creek), Burlington, Camden, Cape May (Dias Creek, Fishing Creek, Ocean City), Cumberland (Bay Side, Cohansey Creek), Gloucester (Oldman's Creek), Middlesex (Perth Amboy), Monmouth (Asbury Park, Long Branch, Ocean Grove, Raritan Bay, Red Bank) and Ocean Counties.

ENGRAULIDIDÆ.

Anchovia duodecim (Cope). Cope's Anchovy.

Cape May County. Only known from the type.

Anchovia eurystole (Swain and Meek). Slender Anchovy.

Atlantic, Cape May and Ocean Counties.

Anchovia brownii (Gmelin). Broad-banded Anchovy.

Atlantic and Cape May Counties.

Anchovia mitchilli (Valenciennes). Sperlin.

Atlantic (Atlantic City), Cape May (Cape May Point), Cumberland (Egg Island), Monmouth (Asbury Park and Manasquan), Ocean (Seaside Park), Salem Counties.

SALMONIDÆ.

Salvelinus fontinalis (Mitchill). Brook Trout.

Bergen (Hackensack River at Englewood, Passaic River at Paterson and Oakdale), Burlington (Black and Kettle Runs, tributary to Haines Creek, Barton's Run, all Rancocas basin), Camden (Trout Run at Clementon, Kirkwood and White Horse, all Cooper's Creek basin), Cumberland (Newville), Essex (Brookdale), Gloucester (Little and Big Lebanon Runs, tributaries to Big Timber Creek; Mantua Creek at Pitman; Little Ease and Scotland Runs, tributaries of Maurice River; Woodbury Creek),

Hudson (Hackensack River basin near Jersey City Heights), Mercer (Crosswicks Creek at Trenton), Middlesex (mouth of Raritan at Perth Amboy), Monmouth (Asbury Park lakes, Eatontown, Hockhocken, Pine Brook and tributary of Shrewsbury River), Morris (Lake Hopatcong and Sucassuna), Ocean (Crosswicks Creek near New Egypt), Passaic (Greenwood Lake), Salem, Sussex (Delaware River), Warren (Belvidere). In many localities formerly, now largely introduced.

ARGENTINIDÆ.

Osmerus mordax (Mitchill). Smelt.

Bergen, Essex, Hoboken, Mercer, Middlesex, Monmouth (introduced in Lake Hopatcong) and Passaic (introduced in Greenwood Lake) Counties.

PARALEPIDIDÆ.

Paralepis barracudina Fowler and Phillips.

Described from Corson's Inlet in 1910.

SYNODONTIDÆ.

Synodus foetens (Linnæus). Lizard-fish.

Atlantic, Cape May and Ocean Counties.

TACHYSURIDÆ.

Bagre marinus (Mitchill). Gaff-topsail Cat.

Cape May, Monmouth, Ocean and Salem Counties.

ICTALURIDÆ.

Ameiurus catus Linnæus). White Cat.

Atlantic (Nancock Creek), Burlington (Delanco, Dutch Neck fishery, Riverton), Camden (Camden and Westville), Cape May (Cedar Swamp Creek and Johnson's Run), Cumberland (Bay Side and Bridgeton), Gloucester (Pitman), Hunterdon (Lambertville), Mercer (Millstone River near Princeton), Passaic (Greenwood Lake), Salem (Pedricktown) Counties.

Ameiurus natalis (Le Sueur). Yellow Cat.

Atlantic, Burlington, Camden, Cape May and Salem Counties.

Ameiurus nebulosus (Le Sueur). Common Cat.

Atlantic, Bergen (Saddle River at Ridgewood), Burlington (Beverly, Brown's Mills, Delanco, East Branch of Haines Creek and its tributaries, Black and Kettle Runs, Florence, Newton Bridge, Oliphant's Mill), Camden (Blackwood Lake), Cape May (Cedar Swamp and Dias Creeks), Essex, Gloucester (Pitman and Black Pond at Swedesboro), Hunterdon (Croton), Mercer (Assanpink Creek and Carnegie Lake at Princeton), Middlesex (Raritan River), Monmouth (Manasquan River), Morris (Upper Longwood Pond of Lake Hopatcong), Passaic (Greenwood Lake), Salem (Elmer and Palastine Lakes), Sussex (Culver's Pond), Warren Counties.

Schilbeodes gyrinus (Mitchill). Tadpole Cat.

Atlantic (May's Landing), Bergen, Burlington (Burlington), Camden, Cumberland, Essex, Gloucester, Mercer (Assanpink Creek near Trenton), Morris, Passaic, Salem, Sussex Counties.

Schilbeodes insignis (Richardson). Margined Cat.

Hunterdon, Mercer and Sussex Counties.

CYPRINIDÆ.¹

Hybognathus nuchalis regius (Girard). Silvery Minnow.

Burlington (Burlington, mouth of Crosswicks Creek, Delanco, Riverton), Camden (Cooper's Creek at Haddonfield, Camden, Palmyra), Mercer (Crosswicks Creek, Duck Island, Delaware River at Trenton), Middlesex and Salem Counties.

Pimephales notatus (Rafinesque). Blunt-nosed Minnow.

Mercer and Hunterdon Counties.

Semotilus bullaris (Rafinesque). Fall Fish.

Atlantic (May's Landing), Bergen (Hackensack River above Oradel), Burlington (East Branch of Haines Creek, Mount Holly, Newton's Mill, Oliphant's Mill), Cape May (Cedar Swamp Creek and Wallace's Run, a tributary of Tuckahoe River), Gloucester (Black Pond at Swedesboro, introduced, Mantua and Timber Creeks), Hudson, Hunterdon, Mercer (Carnegie Lake at Princeton and McCall's Brook at Trenton), Morris, Passaic, Somerton (Raritan River below Bound Brook), Warren Counties.

Semotilus atromaculatus (Mitchill). Creek Chub.

Burlington, Hunterdon, Mercer (McCall's Brook), Morris (Lake Hopatcong), Passaic, Warren (Belvidere) Counties.

Abramis crysoleucas (Mitchill). Roach.

Atlantic (Bargaintown on Nancock Creek), Bergen (Saddle River at Ridgewood and Vreeland's Pond), Burlington (Assiscunk Creek, Burlington, Burlington Island, Delaware River at Delanco, East Branch of Haines Creek, Florence, Newton's Bridge, Oliphant's Mill), Camden (Camden, Newton and Pensauken Creeks), Cape May (Dias Creek, Fishing Creek at Fulling Mill Bridge, Green and Sluice Creeks, Wallace's Run tributary to Tuckahoe River), Cumberland, Essex, Gloucester (Oldman's Creek, Pitman, Still Run at Porchtown), Hunterdon, Mercer (Assanpink Creek, Duck Island in Delaware River, Shabbaconk Creek), Morris (Succasunna), Ocean, Passaic, Salem (Elmer, Mud Creek and pond below), Sussex and Warren Counties.

¹ Abbott records *Leuciscus margarita* (Cope) from the mouth of the Assanpink Creek at Trenton. As the material on which this rests has long since disappeared, together with no subsequent New Jersey specimens having been taken and the great possibility of wrong determination, the species had best be omitted. Likewise Abbott's record for *L. vandoisulus* Valenciennes, and Eugene Smith's mention of *Hybopsis kentuckiensis* (Rafinesque), recorded from "two different points on the Passaic River." Smith's specimens do not appear to have been located.

Notropis bifrenatus (Cope). Bridled Minnow.

Bergen, Burlington (Assiscunk Creek, Burlington and Dutch Neck), Camden, Cumberland, Essex, Gloucester, Mercer and Morris Counties.

Notropis procne (Cope). Swallow Minnow.

Gloucester, Mercer and Middlesex Counties. Although recorded from the Palisades and vicinity of New York City, it is quite likely that the preceding species is confused by Eugene Smith.

Notropis hudsonius amarus (Girard). Spawn-eater.

Bergen, Burlington (Burlington, Florence and Rancocas Creek at Delanco), Camden (Camden), Mercer and Salem Counties.

Notropis whiplii analostanus (Girard). Silver-fin.

Burlington (Assiscunk Creek, Dutch Neck fishery, Florence and River-ton), Camden, Gloucester, Hunterdon and Mercer Counties.

Notropis cornutus (Mitchill). Red-fin.

Bergen (Saddle River at Ridgewood and Hackensack River at Westwood), Burlington, Essex, Gloucester (Sewell and Wenonah), Hunterdon, Mercer (Assanpink Creek), Morris (Lake Hopatcong), Passaic, Salem, Sussex and Warren Counties.

Notropis chalybaeus (Cope). Iron-colored Minnow.

Atlantic (May's Landing), Burlington (East Branch of Haines Creek, Delanco), Camden, Cape May, Cumberland, Gloucester, Mercer, Passaic, Salem (pond near Muddy Creek) Counties.

The dark Coastal Plains form described as *N. chalybaeus abbotti* Fowler in 1904, from the Batsto.

Notropis photogenis amoenus (Abbott). Attractive Minnow.

Burlington (Delaware River at Burlington), Camden (Camden), Mercer and Passaic Counties. Originally described from the typical Piedmont at Trenton.¹

Rhinichthys cataractae (Valenciennes). Long-nosed Dace.

Hunterdon, Mercer, Morris and Warren Counties.

Rhinichthys atronasmus (Mitchill). Black-nosed Dace.

Bergen (Fort Lee and Ridgewood in Saddle River), Essex, Hunterdon, Mercer, Morris (Lake Hopatcong), Passaic and Warren Counties.

Exoglossum maxillingua (Le Sueur). Cut-lips.

Hunterdon and Passaic Counties.

CATOSTOMIDÆ.²**Catostomus commersonnii** (Lacépède). Common Sucker.

Atlantic (Nancock Creek at Bargaintown), Bergen (Ridgewood and

¹ *Alburnellus amoenus* Abbott, Am. Nat., 8, 1874, p. 334.

² *Carpiodes cyprinus* (Le Sueur) though early credited to Philadelphia by Valenciennes (Hist. Nat. Poiss., 17, 1844, p. 353) and later mentioned by Cope and Abbott, is not certainly known from New Jersey.

Passaic River), Burlington (Assiscunk Creek, Burlington, Delanco, Florence, Newton's Mill, Oliphant's Mill), Camden (Pensauken), Cape May (Cedar Swamp and Dennis Creeks), Cumberland (Bridgeton), Essex, Gloucester (Turnersville), Hunterdon, Mercer (Carnegie Lake at Princeton and Delaware River at Trenton), Morris (Upper Longwood Pond), Monmouth (lakes at Asbury Park and Manasquan River), Ocean, Passaic, Somerset (Plainfield), Sussex and Warren Counties.

Catostomus nigricans Le Sueur. Black Sucker.

Bergen, Mercer (Carnegie Lake), and Morris Counties. The material in the Academy was simply labeled New Jersey and likely came from Morris County. Also in the same region I saw a single example in a tributary of the Raritan east of Chester. Its rarity suggests the possibility of introduction.

Erimyzon sucetta oblongus (Mitchill). Chub Sucker.

Atlantic (Bargaintown on Nancock Creek and Pancoast Mills), Bergen (Ridgewood on Saddle River and Hackensack River at Westwood), Burlington (Atco on Mullica River, Black Run tributary to Haines Creek and East Branch of latter, Burlington, Rancocas Creek at Delanco, Newton's Bridge, Oliphant's Mill), Camden, Cape May (Dennis, Dias, Fishing and Goshen Creeks, Johnson's Run tributary to Tuckahoe River), Cumberland (Bridgeton), Essex, Gloucester (Still Run at Porchtown), Mercer (Assanpink and Carnegie Lake at Princeton), Morris (Budd Lake), Salem, Sussex and Warren Counties.

Moxostoma macrolepidotum (Le Sueur). Red-horse.

Though originally described from the Delaware by Le Sueur, where apparently now rare, as I have not seen any examples. Eugene Smith records it doubtfully from the upper Passaic basin.

ANGUILLIDÆ.

Anguilla rostrata (Le Sueur). Eel.

Atlantic (Bargaintown on Nancock Creek, Pancoast Mills), Bergen (Hackensack River), Burlington (Black Run and East Branch of Haines Creek, Brown's Mills, Delanco, Florence, Atco on the Mullica River, Newton's Bridge and Oliphant's Mill), Camden (Camden and Pensauken), Cape May (Grassy Sound, Johnson's Run, Ludlam Bay, Wallace's Run, Whale Creek), Cumberland (Bay Side), Gloucester (Oldman's Creek), Hunterdon, Mercer (Assanpink Creek), Middlesex (The Kills), Monmouth (Fairhaven, Oceanic, Red Bank, Shrewsbury River), Ocean (Barnegat Inlet, Toms River), Passaic (Greenwood Lake, Passaic River formerly, Vreeland's Park), Salem (Elmer), Sussex and Union Counties.

CONGRIDÆ.

Conger conger (Linnaeus). Conger Eel.

Atlantic, Cape May (Cape May), Monmouth (Asbury Park, Cholera Bank) Counties.

Leptocephalus phillipsi (Fowler):

Described from Corson's Inlet in 1909¹ and found again in 1912.

Leptocephalus novae-caesariensis (Fowler).

Described from Beesley's Point in 1912.²

ESOCIDÆ.

Esox americanus (Gmelin). Banded Pickerel.

Atlantic, Bergen, Burlington, Camden (Blackwood), Cape May, Cumberland (Bridgeton), Gloucester (Washington Park), Hunterdon, Mercer, Middlesex (Outcall's Pond near Spotswood), Morris, Ocean, Salem and Sussex Counties.

Esox tridecemlineatus Mitchill. Chain Pickerel.

Atlantic, Bergen (Saddle River at Ridgewood and Ramapo River), Burlington (Brown's Mills), Camden, Cape May, Cumberland (Millville Lake), Essex (Caldwell and Brookdale), Gloucester, Hunterdon (Croton Pond), Mercer, Monmouth (Deal Lake at Asbury Park), Morris (Budd Lake and Splitrock Pond), Ocean (Forked River, Metedecong River, Toms River), Passaic (Greenwood Lake), Salem, Sussex (Dicker and Double Ponds, Echo, Panther, Pickatummy and Swartzwood Lakes, Morris Pond), Warren (Allamuchy Pond) Counties.

UMBRIDÆ.

Umbra pygmaea (De Kay). Mud Minnow.

Atlantic, Bergen, Burlington (Burlington, Dutch Neck fishery), Camden, Cape May (Green Creek), Cumberland, Essex, Gloucester (Pitman), Mercer, Morris and Salem Counties.

PÆCILIIDÆ.

Fundulus majalis (Walbaum). May Fish.

Atlantic, Cape May (Townsend's Inlet), Cumberland (Bay Side), Hudson, Monmouth and Ocean Counties.

Fundulus heteroclitus macrolepidotus (Walbaum). Mummichog.

Atlantic (Atlantic City, Nancock Creek), Burlington (Assisunk Creek, Bread and Milk Island, Burlington, Centerton, Delanco, Florence, Riverside, Riverton), Camden (Camden), Cape May (Anglesea, Dias Creek, Fishing Creek, Pond Creek, Stone Harbor, Townsend's Inlet), Cumberland (Bay Side), Gloucester (Mantua Creek), Hudson, Mercer (Bordentown, Crosswicks, Duck Island), Monmouth, Ocean and Salem Counties.

Fundulus diaphanus (Le Sueur). Barred Killifish.

Atlantic, Bergen (Englewood), Burlington (Burlington, Centerton, Delanco, Florence, Florence Bar, Riverside, Riverton), Cape May (Dennis, Dias, Fishing and Green Creeks, Teal's Branch of Pond Creek), Cumber-

¹ *Atopichthys phillipsi* Fowler, in Proc. Acad. Nat. Sci. Phila., 1909, p. 406, fig.

² *Atopichthys novae-caesariensis* Fowler, Proc. Acad. Nat. Sci. Phila., 1912, p. 35, fig.

land, Gloucester, Hudson, Hunterdon, Mercer (Assanpink and Crosswicks Creeks), Salem and Warren Counties.

Fundulus luciae (Baird). Brown Killifish.

Cape May, Cumberland and Ocean Counties.

Lucania parva (Baird). Rain-water Fish.

Atlantic, Cape May, Cumberland, Monmouth and Ocean (Cedar Creek) Counties.

Cyprinodon variegatus Lacépède. Porsy Minnow.

Atlantic, Cape May (Anglesea, Peck's Bay, Townsend's Inlet), Cumberland, Hudson, Monmouth and Ocean Counties.

Gambusia affinis (Baird and Girard). Top Minnow.

Camden (introduced in 1904), Burlington (introduced in 1904, unsuccessful) and Cape May Counties. First discovered in streams of the last during 1907. When the same streams were examined in 1918 the species had disappeared.

SYNGNATHIDÆ.

Syngnathus fuscus Storer. Pipe Fish.

Atlantic, Cape May, Hudson, Monmouth and Ocean Counties.

Hippocampus hudsonius De Kay. Sea Horse.

Atlantic, Cape May (Sea Isle City), Cumberland (Fortescue) and Monmouth Counties.

EXOCOETIDÆ.

Exocoetus volitans Linnæus. Flying Fish.

Two obtained August 27, 1910, at Cape May beach.¹

Cypselurus exiliens (P. L. S. Müller).

Valenciennes records it from New Jersey, though without further locality.²

Cypselurus heterurus (Rafinesque).

Included as Dr. H. M. Smith mentions it from the north shores in 1894. Abbott reported a specimen from Beesley's Point as *Exocoetus noveboracensis* in 1868. I have been unable to locate it in the Academy.

Cypselurus nigricans (Bennett). Black Flying Fish.

A fine one secured at Sea Isle City in 1915.³

HEMIRAMPHIDÆ.

Hyporhamphus unifasciatus (Ranzani). Half Beak.

Atlantic, Cape May and Monmouth Counties.

¹ Fowler, Proc. Acad. Nat. Sci. Phila., 1910 (1911), p. 601.

² *Exocoetus exiliens*, in Hist. Nat. Poiss., 19, 1846, p. 85.

³ Fowler, Copeia, No. 27, February 24, 1916, p. 10.

The record of *Cypselurus furcatus* by Abbott in 1868, from "off shore," may be dropped, as no reference to the material is given. Likewise his reference to the Saury, as *Scombrosox scutellatus*, as no New Jersey specimens have been found in recent years.

Hemiramphus brasiliensis (Linnaeus). Balão.

Three secured at Sea Isle City in 1906.¹

Euleptorhamphus brevoortii Gill. Ribbon Half Beak.

Once obtained at Atlantic City.

BELONIDÆ.

Strongylura marina (Walbaum). Green Gar.

Atlantic (Nancock Creek), Burlington (Burlington, Florence), Cape May (Cedar Swamp Creek and Holly Beach), Cumberland (Fortescue), Gloucester (Oldman's Creek), Hudson (Black Tom Island), Mercer (Duck Island), Middlesex, Monmouth, Ocean, Salem (Oakwood Beach) Counties.

Strongylura acus (Lacépède). Houndfish.

Atlantic and Cape May Counties. It is quite likely the record for *Tylosurus gladius* from Ocean City² is the young of the present species, rather than of *S. raphidoma* (Ranzani), with which it has been identified by most writers.

SPHYRÆNIDÆ.

Sphyraena barracuda (Walbaum). Great Barracuda.

Young recorded as *S. picuda*, from Beesley's Point.³

Sphyraena borealis De Kay. Northern Barracuda.

Cape May and Monmouth Counties.

ATHERINIDÆ.

Membras vagrans (Goode and Bean). Rough Silversides.

Atlantic and Cape May Counties.

Menidia beryllina (Cope). Fresh-water Silversides.

Cape May, Cumberland and Monmouth Counties.

Menidia menidia notata (Mitchill). Silversides.

Atlantic, Cape May (Coxe's Hall Creek, Townsend's Inlet), Cumberland (Bay Side, Bridgeton), Monmouth (Asbury Park, Manasquan Inlet), Ocean and Salem Counties.

MUGILIDÆ.

Mugil cephalus Linnaeus. Striped Mullet.

Atlantic and Cape May Counties.

Mugil curema Valenciennes. White Mullet.

Atlantic, Cape May (Anglesea and Cedar Swamp Creek), Monmouth and Ocean (Spray Beach) Counties.

¹ Fowler, Science, 24, November 9, 1906, p. 596.

² T. H. Bean, Bull. U. S. F. Com., VII, 1887 (1888), p. 146, pl. 2, fig. 15.

³ T. H. Bean, Bull. U. S. F. Com., VII, 1887 (1888), p. 145, pl. 2, fig. 14.

GASTEROSTEIDÆ.

Pungitius pungitius (Linnæus). Nine-spined Stickleback.

Hudson and Cape May Counties.

Gasterosteus aculeatus Linnæus. Two-spined Stickleback.

Bergen, Cape May, Cumberland, Hudson, Middlesex and Ocean Counties.

Apeltes quadracus (Mitchill). Three-spined Stickleback.

Atlantic (Atlantic City), Bergen, Burlington (Burlington, Florence), Camden (Camden), Cape May (Great Egg Harbor Bay), Cumberland, Mercer (Assanpink Creek), and Ocean (Beach Haven) Counties.

APHREDODERIDÆ.

Aphredoderus sayanus (Gilliams). Pirate Perch.

Atlantic, Burlington (Mount Holly in Rancocas Creek), Camden (Pensauken Creek), Cape May, Gloucester, Mercer and Salem Counties.

SCOMBRIDÆ.

Scomber scombrus Linnæus. Mackerel.

Atlantic, Cape May (Anglesea and Green Creek), Monmouth (Asbury Park and Manasquan) and Ocean Counties.

Scomber colias Gmelin. Chub Mackerel.

Cape May and Monmouth Counties.

Euthynnus pelamis (Linnæus). Oceanic Bonito.

Once recorded from off Manasquan, Monmouth County.¹

Euthynnus alleteratus (Rafinesque). Little Tunny.

Monmouth and Ocean Counties.²

Thunnus thynnus (Linnæus). Tunny.

Cape May (Cape May and Ocean City), Monmouth (Asbury Park and Seabright) and Ocean Counties.

Sarda sarda (Bloch). Bonito.

Atlantic, Cape May, Monmouth (Asbury Park, Cholera Bank, Seabright), Ocean (Barnegat and Barnegat Inlet) Counties.

Scomberomorus maculatus (Mitchill). Spanish Mackerel.

Atlantic, Cape May (Cape May and Sea Isle City), Monmouth (Bradley Beach, Ocean Grove), and Ocean Counties.

Scomberomorus regalis (Bloch). Sicr.

Cape May and Monmouth Counties.

TRICHIURIDÆ.

Trichiurus lepturus Linnæus. Cutlass Fish.

Atlantic, Cape May (Corson's Inlet), Monmouth and Ocean Counties.

¹ Bull. Zool. Soc. N. Y., No. 48, November, 1911, p. 811.

² Forest and Stream, December 22, 1892.

ISTIOPHORIDÆ.

Istiophorus nigricans (Lacépède). Sail Fish.
Cape May and Monmouth Counties.

XIPHIIDÆ.

Xiphias gladius Linnæus. Sword Fish.
Atlantic, Cape May, Monmouth and Ocean Counties.

CARANGIDÆ.¹

Seriola zonata (Mitchill). Amber Fish.
Atlantic, Cape May (Great Egg Harbor Bay) and Monmouth Counties.

Seriola lalandi Valenciennes. Jenny Lind.
Cape May and Monmouth Counties.

Decapterus punctatus (Agassiz). Scad.

I have examined some of Moore's Avalon material. Abbott records it from Cape May.

Selar crumenophthalmus (Bloch). Goggle-eye.
Recorded from Beesley's Point by Gill.²

Caranx hippos (Linnæus). Crevallé.
Atlantic and Cape May (Cape May) Counties.

Caranx crysos (Mitchill). Yellow Crevallé.
Atlantic, Cape May and Monmouth (Belford, Long Branch, Shrewsbury Inlet³) Counties.

Caranx latus Agassiz. Jurel.
Recorded from Ocean County, from young example obtained in 1876.

Blepharis crinitus (Mitchill). Thread Mackerel.
Cape May County.

Vomer setapinnis (Mitchill). Plough Fish.
Cape May County.

Selene vomer (Linnæus). Moon Fish.
Cape May, Middlesex (Perth Amboy) and Monmouth Counties.

Trachinotus falcatus (Linnæus). Round Pampano.
Atlantic, Cape May (Ocean City) and Monmouth Counties.

Trachinotus carolinus (Linnæus). Pampano.
Atlantic, Cape May and Monmouth Counties.

¹ *Nauclates ductor*, once recorded from Beesley's Point by Abbott, has not since been noticed in New Jersey, though as it may have been confused with *Seriola* is omitted.

² As *Trachurops crumenophthalmus* in Proc. Acad. Nat. Sci. Phila., 1862, p. 433.

³ As *Caranx* by Brevoort, Forest and Stream, IX, November 29, 1977, p. 326.

POMATOMIDÆ.¹

Pomatomus saltatrix (Linnæus). Blue Fish.

Atlantic (Absecon, Brigantine, Somers Point), Bergen (Hudson River), Burlington, Cape May (Anglesea, Delaware Bay, Dias Creek, Grassy Sound, Great Egg Harbor Bay), Cumberland (Bay Side), Hoboken, Mercer, Monmouth, Ocean (Barnegat, Barnegat Inlet, Beach Haven, Seaside Park, Spray Beach), Salem (Oldman's Creek) Counties.

RACHYCENTRIDÆ.

Rachycentron canadum (Linnæus). Sergeant Fish.

Atlantic, Cape May (Delaware Bay) and Monmouth Counties.

STROMATEIDÆ.

Poronotus triacanthus (Peck). Butter Fish.

Atlantic, Cape May and Monmouth (Long Branch) Counties.

Palinurichthys perciformis (Mitchill). Black Rudder Fish.

Atlantic, Cape May, Monmouth (Shrewsbury River) and Ocean Counties.

CORYPHÆNIDÆ.

Coryphaena hippurus Linnæus. Dolphin.

Atlantic (an old example received from Atlantic City in 1875), Cape May, Monmouth, Ocean (Beach Haven and Seaside Park) Counties.

MICROPTERIDÆ.

Acantharchus pomotis (Baird). Mud Sunfish.

Atlantic, Bergen (Oakland), Burlington, Camden, Cape May, Essex, Gloucester, Mercer, Morris and Salem Counties. This species was first discovered by T. A. Conrad, some years before Baird described it, and several fine examples were later (1860) sent to the Academy, where they are now in good condition. Slack also sent material the following year from Oakwood.

Enneacanthus obesus (Girard). Sphagnum Sunfish.

Atlantic, Bergen, Camden, Cape May and Gloucester Counties.

Enneacanthus gloriosus (Holbrook). Blue-spotted Sunfish.

Atlantic, Burlington, Camden, Cape May, Gloucester, Mercer, Morris, Salem and Sussex Counties.

Mesogonistius chaetodon (Baird). Banded Sunfish.

Atlantic, Burlington, Camden, Cape May, Mercer and Salem Counties.

¹ *Chloroscombrus chrysurus* and *Peprilus longimanus* (= *Seserinus paru*) are recorded from "our waters" and the "coast" in 1868, by Abbott. As these records are very indefinite they may be dropped. Likewise the record of *Lampugus punctulatus* (= *Coryphaena equiselis* Linnæus), in *Forest and Stream*, V, September 16, 1878, p. 83, from off Sandy Hook

Lepomis auritus (Linnæus). Red-bellied Sunfish.

Bergen, Burlington, Cape May, Essex, Gloucester, Mercer, Morris, Passaic, Sussex and Warren Counties.

Pomotis gibbosus (Linnæus). Common Sunfish.

Bergen, Burlington, Camden (Newton Creek, Pensauken), Cape May, Cumberland, Essex, Gloucester (Sewell), Hunterdon (Croton Lake), Mercer, Monmouth (Deal Lake), Morris (Succasunna and upper Longwood Reservoir), Passaic, Somerset, Salem, Sussex and Warren Counties.

PERCIDÆ.¹**Perca flavescens** (Mitchill). Yellow Perch.

Bergen (Passaic River, Vreeland's Pond), Burlington (Rancocas Creek at Delanco), Camden (Blackwood Pond, Newton Creek, Pensauken), Cape May, Cumberland (Bridgeton), Essex (Newark), Gloucester (Timber Creek), Hunterdon (Croton Lake), Mercer, Monmouth (Asbury Park), Morris (Budd Lake, Succasunna, upper Longwood Reservoir), Ocean (Metedecong River), Passaic (Greenwood Lake), Salem, Somerset (Bound Brook), Sussex (Culver's Lake) Counties.

Boleosoma olmstedii (Storer). Tessellated Darter.

Atlantic, Burlington (Pemberton), Cape May, Essex, Gloucester (Woodbury), Hunterdon, Mercer and Salem Counties.

Boleichthys fusiformis (Girard). Lowland Darter.

Atlantic (Batsto River), Burlington, Cape May (Cape May), Mercer and Somerset Counties.

SERRANIDÆ.²**Roccus lineatus** (Bloch). Striped Bass.

Atlantic (Nancock Creek), Bergen (Hackensack River), Burlington (Dutch Neck fishery), Camden, Cape May (Anglesea, Cold Spring Inlet, Dias Creek, Fishing Creek, Middle Thoroughfare, Petersburg Bridge), Cumberland (Bay Side, Bridgeton, Fortescue, Port Elizabeth, Sea Breeze), Essex (Bayonne, Newark Bay, Passaic River formerly), Gloucester, Hoboken, Hunterdon, Mercer, Middlesex (Cheesequake Creek, Perth Amboy, Sewaren, South Amboy), Monmouth (Allenhurst, Atlantic Highlands, Avon, Belford, Belmar, Deal Beach, Elberton, Fairhaven, Highland Beach, Manasquan, Matawan Creek, Monmouth Beach, Ocean Grove, Oceanic, Port Monmouth, Red Bank, Sandy Hook, Seabright, Shrewsbury River, Stump Creek), Ocean (Barnegat Inlet, Beach Haven, Forked River, Harvey Cedars, Metedecong River, Mullica River, Point Pleasant, Seaside Park, Toms River, Tuckerton, Waretown), Salem (Oakwood Beach, Pedricktown, Pennsville), Union (Elizabeth and Kill Von Kull) Counties.

¹ *Percina caprodes* is recorded from the Delaware at Trenton, by Abbott in 1868, and may have been introduced. Likewise the record for *Paecilichthys flabellaris* by Eugene Smith, from the Hackensack River in 1897.

² *Duleichthys auriga* reported from Cape May by Abbott, is likely a confused identification. Possibly De Kay's New York harbor record is really intended.

Morone americana (Gmelin). White Perch.

Atlantic (Little Egg Harbor River and Nancock Creek), Bergen (Hackensack and Hudson Rivers), Burlington (Beverly, Delanco, Dutch Neck fishery, Pensauken Creek, Riverton), Camden (Camden, Gloucester), Cape May (Cedar Hammocks, Cold Spring Inlet, Dennis Creek, Dias Creek, Stone Harbor), Cumberland (Bay Side, Fortescue, Sea Breeze), Essex (Newark Bay, Passaic River), Gloucester, Hunterdon, Mercer (Bordentown, Carnegie Lake at Princeton, Duck Island, Washington Crossing), Middlesex (Perth Amboy), Monmouth (Asbury Park, Belmar, Deal Lake, Lake Como, Manasquan), Ocean (Barnegat Bay and Toms River), Salem (Pedricktown, Pennsville, Salem Creek) Counties.

Polyprion americanus (Schneider). Wreck Fish.

Recorded from off Asbury Park, from small example, by Osburn.¹

Epinephelus niveatus (Valenciennes). Snowy Grouper.

Two small ones obtained at Sea Isle City and Corson's Inlet, both in 1915.

Epinephelus morio (Valenciennes). Red Grouper.

Reported from Beesley's Point by Abbott.²

Garrupa nigrita (Holbrook). Black Grouper.

Young example reported by Dr. R. J. Phillips at Corson's Inlet, September 2, 1909.

Centropristis striatus (Linnæus). Black Sea Bass.

Atlantic (Longport), Cape May (Cross Leger, Peck's Bay), Cumberland (Bay Side), Monmouth (Manasquan), Ocean (Beach Haven) Counties.

LOBOTIDÆ.

Lobotes surinamensis (Bloch). Triple-tail.

Cape May, Hudson and Monmouth Counties.

PRIACANTHIDÆ.

Pseudopriacanthus altus (Gill). Rough Catalufa.

Recorded from Atlantic City by Cope in 1870.

LUTJANIDÆ.

Lutjanus griseus (Linnæus). Gray Snapper.

Described by Baird from Beesley's Point as *Lobotes emarginatus*.³ No recent example secured.

Lutjanus aya (Bloch). Red Snapper.

Dr. H. M. Smith records several small ones at Spring Lake, in Monmouth County, in 1892.

¹ Bull. Z. Soc. N. Y., No. 42, November, 1910, p. 705.

² Geol. N. J., 1868, p. 806.

³ Ninth An. Rep. Smiths. Inst., 1854 (1855), p. (18) 332.

Ocyurus chrysurus (Bloch). Yellow-tail.

One obtained at Anglesea in 1890.¹

HÆMULIDÆ.²**Orthopristis chrysopterus** (Linnæus). Pig Fish.

Atlantic, Cape May (Delaware Bay) and Monmouth (Sandy Hook) Counties.

SPARIDÆ.

Stenotomus chrysops (Linnæus). Porgy.

Atlantic, Cape May (Peck's Bay and Townsend's Inlet), Cumberland (Bay Side), Monmouth (Long Branch) and Ocean (Tuckerton) Counties.

Lagodon rhomboides (Linnæus). Sailor's Choice.

Atlantic, Cape May and Monmouth Counties.

Archosargus probatocephalus (Walbaum). Sheepshead.

Atlantic, Cape May, Cumberland (Bay Side), Monmouth and Ocean (Barnegat Inlet) Counties.

GERRIDÆ.

Eucinostomus gula (Cuvier). Mojarrita.

Atlantic, Cape May and Middlesex Counties.

SCIÆNIDÆ.

Cynoscion regalis (Schneider). Weak Fish.

Atlantic (Brigantine, Great Bay), Cape May (Cold Spring Inlet, Townsend's Inlet), Cumberland, Monmouth (Long Branch, Manasquan), Ocean (Barnegat Inlet), Salem (Oldman's Creek) Counties.

Cynoscion nebulosus (Cuvier). Spotted Weak Fish.

Atlantic, Cape May (Delaware Bay, Middle Thoroughfare, Ocean City) and Ocean Counties.

Bairdiella chrysura (Lacépède). Silver Perch.

Atlantic, Cape May (Tuckahoe River), Cumberland, Monmouth and Salem Counties.

Sciaenops ocellatus (Linnæus). Red Drum.

Atlantic, Cape May (Cold Spring Inlet, Town Bank), Cumberland (Bay Side), Monmouth, Ocean and Salem (mouth of Salem Creek) Counties.

Leiostomus xanthurus Lacépède. Goody.

Atlantic, Camden (Washington Park, on the Delaware), Cape May (Beesley's Point, Seven-mile Beach, Stone Harbor, Townsend's Inlet), Cumberland (Bay Side), Monmouth (Long Branch) and Ocean Counties.

¹ Fowler, Copeia, April 16, 1915, No. 17.

² Abbott reports *Haemulon formosum* = *H. plumieri* (Lacépède), from Delaware Bay, a single specimen said to have been taken in July, 1867. He also lists *Anisotremus virginicus* from Barnegat, and then taken to the Trenton fish-market where he saw it. Both these species may be questioned from New Jersey.

Micropogon undulatus (Linnæus). Croaker.

Atlantic, Cape May, Cumberland (Bay Side, Cohansey Creek), Monmouth (Long Branch, Manasquan) and Ocean Counties.

Menticirrhus americanus (Linnæus). Carolina Whiting.

Atlantic and Cape May (Ocean City) Counties.

Menticirrhus saxatilis (Schneider). King Fish.

Atlantic, Cape May (Grassy Sound, Peck's Bay, Tuckahoe River), Cumberland (Bay Side, Fortescue), Monmouth (Manasquan) and Ocean (Barnegat Pier) Counties.

Pogonias cromis (Linnæus). Black Drum.

Atlantic, Cape May (Corson's Inlet, Dias Creek, Town Bank), Cumberland (Bay Side), Monmouth (Sandy Hook), Ocean (Beach Haven) and Salem Counties.

MULLIDÆ.

Mullus auratus (Jordan and Gilbert). Surmullet.

Recorded by Dr. T. H. Bean¹ from Sandy Hook and Dr. H. F. Moore² from Ludlam Bay.

Upeneus maculatus (Bloch). Goat Fish.

Recorded by the writer from Stone Harbor.³

Upeneus phillipsi Fowler. New Jersey Goat Fish.

Described, with the last, from Corson's Inlet. I have since seen another example from Ludlam Bay.

LABRIDÆ.

Tautoglabrus adspersus (Walbaum). Bergall.

Atlantic, Cape May (Cape May, Peck's Bay), Monmouth and Ocean Counties.

Tautoga onitis (Linnæus). Tautog.

Atlantic, Cape May (Anglesea, Cold Spring Inlet, Green Creek), Cumberland, Monmouth and Ocean Counties.

CALLYODONTIDÆ.

Cryptotomus beryllinus Jordan and Swain. Olive Parrot Fish.

Young example recorded by Jordan from Somer's Point.⁴

ILARCHIDÆ.

Chaetodipterus faber (Broussonet). Spade Fish.

Atlantic, Cape May (Holly Beach) and Monmouth Counties.

¹ Bull. Amer. Mus. N. Hist. N. Y., IX, 1897, p. 359.

² Bull. U. S. F. Com., XII, 1892 (1894), p. 362.

³ Occas. Pap. Mus. Zool. Univ. Mich., No. 56, May 6, 1918, p. 8.

⁴ Rep. U. S. F. Comm., XV, 1887 (1891), p. 666.

CHÆTODONTIDÆ.

Chaetodon ocellatus Bloch. Ocellated Butterfly-fish.

Recorded by the late Dr. T. H. Bean from Beesley's Point.

Chaetodon striatus Linnæus. Streaked Butterfly-fish.

The admission of this species to our fauna is based on a specimen received at the Academy in 1830, from Delaware Bay, and obtained by Richard Harlan. This specimen is still in good condition.¹

Pomacanthus arcuatus (Linnæus). Black Angel Fish.

Reported by Baird from Barnegat. Several examples have since been taken at Sea Isle City.

ACANTHURIDÆ.

Hepatus hepatus (Linnæus). Surgeon Fish.

Abbott reports in 1868 "a single specimen has been seen, taken at Tuckerton in 1860."

BALISTIDÆ.

Balistes carolinensis Gmelin. Trigger-fish.

Atlantic, Cape May, Cumberland (Bay Side), Monmouth and Ocean Counties.

Balistes vetula Linnæus. Blue-striped Trigger-fish.

Van Mater records it from Atlantic Highlands.²

MONACANTHIDÆ.

Stephanolepis hispidus (Linnæus). File-fish.

Atlantic, Cape May and Monmouth Counties.

Alutera schoepfii (Walbaum). Orange File-fish.

Atlantic, Cape May and Ocean Counties.

Alutera punctata Agassiz. Spotted File-fish.

Recorded from Corson's Inlet.³

OSTRACIIDÆ.

Lactophrys triqueter (Linnæus). Thrice-angled Trunk-fish.

Recorded from Grassy Sound on young example sent to the writer.⁴

Lactophrys trigonus (Linnæus). Trunk-fish.

Recorded from Atlantic City as *Tetrasomus camelinus* by Abbott.⁵ No examples obtained by me through one reported from Cape May.

¹ Quite likely the reference to *Holacanthus ciliaris* Abbott, Geol. N. J., 1868, p. 811, also credited to Delaware Bay, may have been confused with the Streaked Butterfly-fish.

² Bull. U. S. F. Com., IV, 1884, p. 13.

³ Proc. Acad. Nat. Sci. Phila., 1917, p. 113.

⁴ Science, XXIX, January 8, 1909, p. 79.

⁵ Geol. N. J., 1868, p. 827.

TETRODONTIDÆ.

Lagocephalus laevigatus (Linnæus). Rabbit-fish.

Atlantic, Cape May, Cumberland, Monmouth and Ocean (Barnegat Bay) Counties.

Spheroides maculatus (Schneider). Puffer.

Atlantic, Cumberland (Bay Side), Cape May (Avalon, Dias Creek), Monmouth and Ocean (Beach Haven) Counties.

Spheroides testudineus (Linnæus). Southern Puffer.

Reported from Beesley's Point by the writer.¹

DIODONTIDÆ.

Diodon hystrix Linnæus. Porcupine Fish.

Young recorded from Atlantic City by the writer.² The reference to *D. pilosus* by Abbott³ from the Hudson, is evidently from De Kay.

Chilomycterus atinga (Linnæus). Atinga.

Fine adult example recorded from Ocean City by the writer.⁴

Chilomycterus schoepfi (Walbaum). Burr Fish.

Atlantic, Cape May and Monmouth (Long Branch) Counties.

MOLIDÆ.

Mola mola (Linnæus). Head Fish.

Atlantic, Cape May, Monmouth and Ocean Counties.

SCORPÆNIDÆ.

Sebastes marinus (Linnæus). Rose Fish.

Recorded by Abbott on specimen taken in August 1865, off Sandy Hook.

TRIGLIDÆ.

Prionotus carolinus (Linnæus). Short-finned Gurnard.

Atlantic, Cape May (Anglesea) and Monmouth Counties.

Prionotus evolans strigatus (Cuvier). Long-finned Gurnard.

Atlantic, Cape May and Monmouth Counties.

COTTIDÆ.

Cottus gracilis Heckel. Fresh-water Sculpin.

Warren County. Eugene Smith reported it from the Hackensack and Saddle Rivers, but without definite localities.⁵ The example I reported from "Beesley's Point" may have been obtained in northern New Jersey.⁶

¹ Rep. N. J. State Mus., 1907 (1908), p. 182.

² Proc. Acad. Nat. Sci. Phila., 1917, p. 114.

³ Geol. N. J., 1868, p. 827.

⁴ Proc. Acad. Nat. Sci. Phila., 1919 (1920), p. 297.

⁵ Proc. Linn. Soc. N. Y., No. 9, 1897, p. 40.

⁶ Rep. N. J. State Mus., 1905 (1906), p. 372.

Myoxocephalus aeneus (Mitchill). Little Sculpin.

Atlantic, Cape May and Monmouth Counties.

Myoxocephalus octodecimspinosus (Mitchill). Long-spined Sculpin.

Atlantic, Cape May and Monmouth Counties.

Hemitripteris americanus (Gmelin). Sea Raven.

Cape May and Monmouth Counties.

CYCLOPTERIDÆ.¹

Cyclopterus lumpus Linnæus. Lump fish.

Atlantic, Cape May (Sea Isle City) and Monmouth Counties.

DACTYLOPTERIDÆ.

Cephalacanthus volitans (Linnæus). Flying Gurnard.

A few records in Cape May County.

ECHENEIDIDÆ.

Leptecheneis naucrates (Linnæus). Slender Remora.

Cape May (Cape May, Corson's Inlet), Monmouth (Long Branch, one received by the Academy in 1844), Ocean (Bay Head) Counties.

The examples mentioned from the Delaware River by Abbott² were taken from the bottom of a vessel that came up the river to Philadelphia, about 1861, and are in no sense to be considered New Jersey specimens.

Echeneis remora Linnæus. Remora.

Listed as simply from New Jersey by Abbott in 1868. No examples obtained by me, though reported from a large shark taken in Peck's Bay about ten years ago.

BOTHIDÆ.

Lophopsetta maculata (Mitchill). Window Pane.

Atlantic, Cape May (Dias and Fishing Creeks, Peck's Bay) Counties.

Citharichthys micros Fowler. Least Whiff.

Described from Corson's Inlet.³

Citharichthys spilopterus Günther. Speckled Whiff.

Reported by Jordan and Goss "north to New Jersey."⁴

Etropus microstomus (Gill). Little Flounder.

Atlantic and Cape May Counties. Described from Beesley's Point as *Citharichthys microstomus* Gill.⁵

¹ Abbott records *Aspidophoroides monopterygius* on a single example from off Sandy Hook, taken in the summer of 1864. See Geol. N. J., 1868, p. 816.

² *Echeneis albacauda* in Geol. N. J., 1868, p. 818.

³ Proc. Acad. Nat. Sci. Phila., 1911, p. 200, figs.

⁴ Rep. U. S. F. Com., 1885 (1889), p. 276.

⁵ Proc. Acad. Nat. Sci. Phila., 1864, p. 223.

Paralichthys dentatus (Linnæus). Summer Flounder.

Atlantic (Absecon), Cape May (Cold Spring Inlet, Fishing Creek, Peck's Bay, Townsend's Inlet), Cumberland (Bay Side), Monmouth (Manasquan) and Ocean Counties.

PLEURONECTIDÆ.

Hippoglossus hippoglossus (Linnæus). Halibut.

Monmouth County. First recorded by Mitchill from off Sandy Hook.¹

Limanda ferruginea (Storer). Fluke.

Once found at Sewell's Point, Cape May.²

Pseudopleuronectes americanus (Walbaum). Winter Flounder.

Atlantic, Cape May (Peck's Bay, Sea Isle City), Middlesex (Raritan Bay), Monmouth and Ocean Counties.

SOLEIDÆ.

Achirus fasciatus Lacépède. Sole.

Atlantic, Bergen, Burlington, Cape May (Dias Creek), Cumberland (Bay Side), Mercer, Monmouth and Salem Counties.

GOBIIDÆ.

Gobiosoma bosc (Lacépède). Naked Goby.

Atlantic and Cape May (Beesley's Point) Counties.

URANOSCOPIDÆ.

Astroscopus guttatus Abbott. Star Gazer.

Atlantic, Cape May and Monmouth Counties.

BATRACHOIDIDÆ.

Opsanus tau (Linnæus). Toad Fish.

Atlantic, Cape May (Grassy Sound), Cumberland (Bay Side), Monmouth and Ocean (Barnegat Pier) Counties. Described as *Batrachoides variegatus* by Le Sueur, from Egg Harbor, in 1823.

BLENNIIDÆ.

Blennius foxi Fowler.

Described from Sea Isle City by the writer.³

Hypsoblennius hentz (Le Sueur). Shell Blenny.

The occurrence of this species is based on an example in the Academy, labeled "Beesley's Point," received from Samuel Ashmead.⁴

Also another example in the collection, from Cape May, but without

¹ As *Pleuronectes hippoglossus*, in Trans. Lit. Philos. Soc. N. Y., I, 1815, p. 338.

² Fowler, Science, XXIV, November 9, 1906, p. 596.

³ Proc. Acad. Nat. Sci. Phila., 1914, p. 344, fig. *B. fucorum* is mentioned by Abbott in 1868, doubtless with De Kay in mind.

⁴ *Hypleurochilus geminatus* (non Wood) Fowler, Rep. N. J. State Mus., 1905 (1906) p. 403.

further data. It may be one of two examples mentioned in an old donation to the museum.¹ Possibly the other example is *Chasmodes bosquianus*. The above information therefore adds another interesting southern species to the New Jersey fauna.

Chasmodes bosquianus (Lacépède). Large-mouthed Blenny.

Not previously reported from New Jersey, though several examples without further locality have been examined and compared in this connection. Some time ago I wrongly identified a fine fresh example,² received in an empty oyster-shell from Virginia. Often small fish brought to our markets in oyster-shells, or among oyster clusters, are found to be this species, others young toad fishes.

LYCODIDÆ.³

Enchelyopus anguillaris (Peck). Eel-pout.

Atlantic, Cape May and Monmouth Counties.

OPHIDIIDÆ.

Rissola marginata (De Kay). Sand Cusk.

Atlantic, Cape May and Monmouth Counties.

AMMODYTIDÆ.

Ammodytes americanus De Kay. Sand Lance.

Atlantic (Atlantic City), Cape May (Cold Spring Inlet) and Monmouth (Asbury Park) Counties.

GADIDÆ.

Pollachius virens (Linnæus). Pollack.

Atlantic, Cape May and Monmouth Counties.

Microgadus tomcod (Walbaum).⁴ Tom-cod.

Gadus callarias Linnæus. Cod-fish.

Atlantic, Cape May (Corson's Inlet, Five Fathom Bank, McCrie's Shoal), Monmouth (Manasquan) and Ocean Counties.

Melanogrammus aeglefinus (Linnæus). Haddock.

Cape May, Monmouth and Ocean Counties.

Phycis regius (Walbaum). Spotted Codling.

Atlantic, Cape May and Monmouth Counties.

¹ *Blennius punctatus* (non Fabricius), in Proc. Acad. Nat. Sci. Phila., IV, 1849, p. 163.

² As *Hypleurochilus geminatus*, in Rep. N. J. State Mus., 1906 (1907), p. 343, pl. 115.

³ Doubtful records are *Anarhichas lupus* and *Muraenoides mucronatus* = *Pholis gunnellus*, both given by Abbott in 1868.

⁴ Abbott records *Brosmius brosme* in 1868 on two examples from Cape May, likely an erroneous identification. It is quite possible these specimens were really those listed in the additions to the museum of the Academy as *Morrhua pruinosa*, in Proc. Acad. Nat. Sci. Phila., XII, 1860, p. V, obtained at Beesley's Point by Samuel Ashmead.

Phycis tenuis (Mitchill). Slender Ling.

Atlantic, Cape May and Monmouth Counties.

Phycis chuss (Walbaum). Ling.

Atlantic, Cape May and Monmouth Counties.

MERLUCCIIDÆ.

Merluccius bilinearis (Mitchill). Hake.

Atlantic, Cape May (Corson's Inlet, Holly Beach), Monmouth (Manasquan) and Ocean (Long Beach) Counties.

LOPHIIDÆ.

Lophius piscatorius Linnæus. Angler.

Atlantic, Cape May (Ocean City, Town Bank, Townsend's Inlet), Cumberland (Bay Side) and Monmouth Counties.

ANTENNARIIDÆ.

Histrio histrio (Linnæus). Sargassum Fish.

Reported from Beesley's Point by Abbott, in 1868.

Antennarius scaber (Cuvier). Frog Fish.

Described as *A. teleplanus* Fowler, from Corson's Inlet. Compared with examples from the West Indies and tropical America, the above example only differs in a few minor details, which are not specific.

INTRODUCED SPECIES.

AMIATIDÆ.

Amiatus calvus (Linnæus). Bowfin.

Camden County.

SALMONIDÆ.

Oncorhynchus tshawytscha (Walbaum). Quinnot Salmon.

Delaware and Raritan Rivers. - Unsuccessful.

Salmo salar Linnæus. Salmon.

Burlington (Bordentown), Cape May, Cumberland and Warren Counties. Delaware, Raritan and Passaic Rivers. Unsuccessful.¹

Salmo salar sebago (Girard). Landlocked Salmon.

Northern Lakes of New Jersey.

Salmo fario Linnæus. Brown Trout.

Salem County.

Salmo irideus Gibbons.

Passaic County.²

Cristivomer namaycush (Walbaum). Great Lake Trout.

Warren County.³

¹ Slack, Fourth An. Rep. C. Fisher. N. J., 1873, p. 23.

² Schiper, Forest and Stream, XXII, 1884, p. 368

³ Slack, Fourth An. Rep. C. Fisher. N. J., 1873, p. 26.

Salvelinus alpinus (Linnæus). Charr.
Stirling Lake.¹

ICTALURIDÆ.

Ictalurus furcatus (Valenciennes). Chuckle-head Cat.
Morris and Passaic Counties.

Ictalurus punctatus (Rafinesque). Spotted Cat.
Mercer County.

CYPRINIDÆ.

Cyprinus carpio Linnæus. Carp.
Burlington, Cape May, Mercer and Passaic Counties.

Carassius auratus (Linnæus). Goldfish.
Bergen, Camden and Mercer Counties. Introduced and escaped from ponds.

ESOCIDÆ.

Esox masquinongy Mitchill. Muskallunge.
Passaic County.

MICROPTERIDÆ.

Pomoxis annularis Rafinesque. Crappie.
Delaware River.

Pomoxis sparoides (Lacépède). Calico Bass.
Burlington (Burlington), Camden (Haddonfield), Mercer, Morris and Salem Counties.

Ambloplites rupestris (Rafinesque). Red-eyed Bass.
Mercer, Morris, Passaic and Salem Counties.

Lepomis incisor Valenciennes. Blue Sunfish.
Burlington (Riverton), Camden, Mercer and Sussex Counties.

Micropterus dolomieu Lacépède. Small-mouth Bass.

Bergen (Hackensack, Mahwah, Ramapo River), Burlington (Delanco), Camden (Blackwood), Cape May, Essex (Newark), Hunterdon (Croton, Delaware River, Lambertville), Mercer (Trenton), Middlesex (Cranberry), Monmouth (Asbury Park, Red Bank), Morris (Brookdale, Green Pond, Milton Lake, Rockaway, Splitrock Pond, Two Bridges, Whippany), Ocean (Metedecong River), Passaic (Echo Lake, Little Falls, Passaic, Paterson, Pompton), Somerset (Bound Brook, East Millstone, Raritan River, Somerville), Sussex (Budd Lake, Culver Lake, Delaware River, Franklin, Long Lake, Newton, Panther Lake, Swartzwood Lake, Waterloo), Warren (Allamuchy Pond, Belvidere, Decker Pond, Delaware River, Hackettstown, Phillipsburg) Counties.

¹ T. H. Bean, Seventh An. Rep. Fish. Game Com. N. Y., 1901, p. 347.

Micropterus salmoides (Lacépède). Large-mouth Bass.

Camden, Cumberland (Bridgeton), Gloucester (Gloucester, Swedesboro, Wenonah), Hunterdon (Lambertville), Middlesex (Metuchen), Morris (Boonton, Budd Lake), Passaic (Greenwood Lake, Patterson, Vreeland's Pond), Salem, Sussex, Warren and Union (Scotch Plains) Counties.

PERCIDÆ.

Stizostedion vitreum (Mitchill). Pike Perch.

Morris and Passaic Counties. Delaware and Raritan Rivers.

SERRANIDÆ.

Roccus chrysops (Rafinesque). White Bass.

Passaic County.

GADIDÆ.

Lota maculosa (Le Sueur). Burbot.

Recorded from the Delaware River at Burlington Island, by Abbott.¹

¹ *Nat. Rambles*, 1885, p. 478.